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NASA BALLOON RESEARCH RIDES TO THE EDGE OF SPACE

The countdown is underway for the launch of a revolutionary research-balloon designed to fly higher and longer than anything before it, and the flight could open a new era in scientific research.

NASA's new Ultra-Long Duration Balloon (ULDB) is scheduled to lift off Jan. 16 from Alice Springs, Australia, and will carry the hopes of many scientists who see balloon technology as an economical means of studying the Earth and space.

"Although balloons have been flying for more than 200 years and scientists have long used them for a variety of research missions, the length of time balloons can stay aloft has always constrained their efforts," said Steve Smith, Chief of the Balloon Program Office, NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, VA. "Thanks to greatly enhanced computer technologies, high-tech materials and advanced designs, longer-range balloons are poised to open a new frontier for high-altitude research".

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The balloon is expected to float over the Southern Hemisphere at an altitude of approximately 115,000 feet (35 kilometers), 3 to 4 times higher than passenger planes. While the test flight is expected to last only about two weeks and circumnavigate the globe, the ULDB is designed to support missions for up to 100 days.

"Balloons provide cost-effective platforms for near-space observations," said Dr. Vernon Jones, Office of Space Science, NASA Headquarters, Washington, DC. "This January flight provides an excellent opportunity to test the newly designed ULDB system."

The full-scale ULDB is the largest single-cell, super-pressure (fully sealed) balloon ever flown. At launch, the balloon is partially inflated with helium and expands as it rises. When fully inflated, the massive ULDB would barely fit inside a domed football stadium.

The ULDB floats above 99 percent of the Earth's atmosphere and can carry a 3,500-pound (1.588-kilogram) payload. The balloon system comes down in a controlled descent. It may be visible from the ground with a telescope and, in some cases, with the naked eye.

The ULDB's unique pumpkin-shaped design and its novel material, a lightweight polyethylene film about the thickness of ordinary plastic food-wrap, were successfully tested during a prototype flight from Ft. Sumner, NM, last June.

"Recent development of new balloon materials and associated technologies will enable challenging, important investigations to be done at relatively modest cost," said Jones. He added that the ability to fly balloons for months or years at a time would create a multitude of scientific and business opportunities.

Conventional high-altitude, scientific balloon flights typically last a few days to a week because temperature changes from day to night ultimately cause the balloon to lose altitude. The ULDB is completely sealed, so gas is not vented to relieve pressure. The new super-pressure balloon will maintain lift, size and shape, and will not lose significant altitude due to atmospheric influences.

Future science missions for the ULDB will study the source of cosmic rays generated from shock waves emanating from supernovae and will perform surveys of X-ray emiting objects in the universe, search for planets around other nearby stars and will study other objects in space, including the Sun.

The Wallops Flight Facility manages NASA's scientific balloon program for the Office of Space Science. Launch operations are conducted by the National Scientific Balloon Facility, Palestine, TX, which is managed for NASA by the Physical Sciences Laboratory of New Mexico State University, Las Cruces. Australian operational support to NASA is provided by the Commonwealth Scientific Industrial Research Organization.

More information on the Ultra-Long Duration Balloon mission and tracking of the balloon flight can be found at:

http://www.wff.nasa.gov/pages/scientificballoons.html

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